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United States Court of Appeals,  
 Federal Circuit.  
 NPF LTD., Plaintiff-Appellant,  
 v.  
 SMART PARTS, INC., Defendant-Appellee.  
 No. 05-1273.

June 27, 2006.

Before NEWMAN, DY K. and PROST, Circuit Judges.

PROST, Circuit Judge.

\*1 In the United States District Court for the Western District of Wisconsin, a jury found in favor of Plaintiff-Appellant NPF Ltd. ("NPF"), rejecting the assertions of Defendant-Appellee Smart Parts, Inc. ("Smart Parts") that claims 21 and 39 of U.S. Patent No. 6,615,814 ("the '814 patent") are invalid by reason of obviousness. However, the district court found a reasonable jury could only conclude that clear and convincing evidence established obviousness and granted judgment as a matter of law ("JMOL") in favor of Smart Parts. *NPF Ltd. v. Smart Parts, Inc.*, 04-C-221-S (Feb. 23, 2005) ("*JMOL Order*"). Because the district court properly concluded that a reasonable jury could only have found the claims obvious, this court *affirms*.

### BACKGROUND

NPF is the owner of U.S. Patent 6,311,682 ("the '682 patent") and the '814 patent. The '814 patent, which is the only patent at issue in this appeal, is a

continuation-in-part of the application which issued as the '682 patent.

The '814 patent is directed to paintball guns. '814 patent, col. 1, l. 10. As described in the patent:

The game of paintball involves participants carrying guns which fire pellets of 'paint' or dye which are fired from the gun and burst upon impact to leave a mark at the point of impact.

Most paintball guns use a pneumatic system for firing the paintballs using compressed air or other gas. More recently, such pneumatically operated guns have begun to be electronically controlled for greater effectiveness.

*Id.*, col. 1, ll. 11-18. The '814 patent describes a paintball gun with control electronics enabling the gun to be operated in different modes of firing and allowing the adjustment of various parameters such as firing rate and number of bursts per second. *Id.*, col. 2, ll. 8-18. The control electronics include a reprogrammable processor programmed with software to control the gun. *See id.*, col. 5, ll. 8-13. By putting the reprogrammable processor in communication with a remote terminal, the control software or programming data in the gun may be updated. *Id.* In addition, the progress and results of a game or the gun's operation or performance may be downloaded through this communication link to the remote terminal. *Id.*

Accordingly, the '814 patent provides for a paintball gun with a data link for transferring data between the gun and a remote terminal. *Id.*, col. 1, ll. 19-21. In particular, claim 21, one of the two claims at issue in this appeal, recites:

21. A paintball gun in communication with a remote terminal, the paintball gun comprising:  
 an input;  
 a pneumatic system coupled to the input for firing one or more paintballs;  
 a memory storing a first set of program instructions;  
 a processing unit coupled to the memory and the input, the processing unit executing the first set of program instructions relating to pneumatic circuit firing mechanism operation data in response to information received from the input; and

\*2 a data communication link coupled to the processing unit, the data communication link for receiving a second set of program instructions relating to pneumatic circuit firing mechanism

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operation data, the second set of program instructions replacing the first program instructions, the second set of program instructions controlling the operation of the pneumatic system.

*Id.*, col. 7, ll. 30-47.

Claim 39, the other claim at issue, recites:

39. A paintball gun in communication with a remote terminal, the paintball gun comprising:

an input;

a pneumatic system coupled to the input for firing one or more paintballs;

a memory storing a set of program instructions for controlling the valve dwell time of the pneumatic system;

a processing unit coupled to the memory and the input, the processing unit executing the set of program instructions relating to controlling the valve dwell time of the pneumatic system.

*Id.*, col. 8, l. 61--col. 9, l. 4.

NPF filed an action for patent infringement alleging that paintball guns manufactured and sold by Smart Parts infringe claim 10 of the '682 patent and claims 21 and 39 of the '814 patent. Smart Parts counterclaimed on grounds of invalidity, inequitable conduct, and tortious interference with contract. In its November 17, 2004 order, the district court ruled on cross-motions for summary judgment. After construing the claims, the court granted NPF's motions that Smart Parts literally infringed all of the asserted claims and that they were not invalid due to anticipation. *NPF, Ltd. v. Smart Parts, Inc.*, 04-C-221-S, slip op. at 9, 14, 20 (Nov. 17, 2004) ("*Summary Judgment Order*"). However, the court found that there were genuine issues of material fact precluding a grant of summary judgment to either party regarding invalidity due to obviousness, inequitable conduct, and tortious interference. *Id.*, slip op. at 22, 25-26.

The issue of obviousness was tried to a jury which returned general verdicts finding claim 10 of the '682 patent invalid for obviousness, but that claims 21 and 39 of the '814 patent were not obvious. After the district court found no inequitable conduct or tortious interference with contract, the jury awarded damages for infringement. Following the entry of judgment, Smart Parts filed a renewed motion for JMOL, asserting that claims 21 and 39 of the '814 patent were obvious and that NPF had committed inequitable conduct in prosecution of the '814 and '682 patents. The district court's order granted the motion in part, finding claims 21 and 39 of the '814 patent invalid for obviousness as a matter of law. [FN1] *JMOL Order*, slip op. at 8.

[FN1]. Although the district court also purported to grant Smart Parts' motion for JMOL that claim 10 of the '682 patent was invalid, that claim had already been found invalid by the jury. *JMOL Order*, slip op. at 8.

NPF timely appealed the district court's grant of JMOL that claims 21 and 39 of the '814 patent are invalid for obviousness. This court has jurisdiction under 28 U.S.C. § 1295(a)(1).

#### DISCUSSION

"The grant of denial of a motion for judgment as a matter of law is a procedural issue not unique to patent law, reviewed under the law of the regional circuit in which the appeal from the district court would usually lie." *Summit Tech., Inc. v. Nidek Co.*, 363 F.3d 1219, 1223 (Fed.Cir.2004). Under Seventh Circuit law, a district court's decision granting JMOL is reviewed de novo. *Harper v. Albert*, 400 F.3d 1052, 1061 (7th Cir.2005). JMOL against a party is appropriate when "a party has been fully heard on an issue and there is no legally sufficient evidentiary basis for a reasonable jury to find for that party on that issue." *Fed.R.Civ.P.* 50(a). As this court recently stated:

\*3 The party requesting the JMOL must show that substantial evidence did not support the jury's findings, where substantial evidence is such relevant evidence from the record taken as a whole as might be accepted by a reasonable mind as adequate to support the finding under review. This court must also consider all the evidence before the jury and draw all reasonable inferences in favor of the prevailing party on that issue, i.e., the non-movant.

*Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332, 1336 (Fed.Cir.2005).

On appeal, NPF asserts that the district court erred in granting JMOL that claims 21 and 39 of the '814 patent are invalid as obvious. Our obviousness analysis proceeds in two steps: first we construe the claims at issue; we then determine whether substantial evidence supported the jury's verdict that claims 21 and 39 of the '814 patent are not invalid for obviousness.

#### I.

The first step in an obviousness analysis is to determine the meaning and scope of each claim. *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1351 (Fed.Cir.2001). "Only when a claim

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is properly understood can a determination be made whether the claim ... renders obvious the claimed invention." *Id.*

Here, the district court construed two disputed terms in claims 21 and 39 of the '814 patent and instructed the jury to use these meanings in its deliberations. The term "data communication link" in claim 21 was construed as "a link for reprogramming a microprocessor." The term "in communication with a remote terminal" in the preamble of both claims was construed as being broader than the data communication link limitation and to include both reprogramming and bi-directional data exchange. Neither of these claim constructions has been challenged on appeal.

Additional issues regarding the scope of the claims are undisputed by the parties but are relevant to our obviousness analysis. First, it is undisputed that the claimed paintball gun need not contain a data communication link that is externally accessible. Neither the express language of the claims nor the claim construction of the "data communication link" term requires such a limitation. In addition, one inventor on the patent, John Rice, asserted that his claims covered an accused paintball gun which has to actually be taken apart to be able to reprogram it.

Further, it is undisputed that the "data communication link" element may be satisfied by the pins on the microprocessor itself. Mr. Rice testified that he understood the "data communication link" element of claim 21 of the '814 patent to cover "a communications port on the microprocessor that provides the ability to reprogram." (J.A. 708.) He also understood that all reprogrammable microprocessors have such a communications port. [FN2] Combining the inventor's two understandings of the scope of the claims, it is clear that a paintball gun with the reprogrammable processor required by the claims also inherently contains the data communication link limitation.

FN2. Reprogrammable processors largely perform the same tasks as single burn microprocessors. However, single burn processors can be programmed only once. If the set of program instructions stored on a single burn processor is defective, that processor chip must be replaced. Reprogrammable processors, on the other hand, can be reprogrammed to replace the instructions stored on them.

\*4 Finally, it is undisputed that the claims encompass reprogramming a paintball gun for any purpose. Mr. Rice testified that the reprogrammability element included reprogramming in the factory, in the field, in a consumer's retail shop and also by the consumer. The '814 patent also notes various uses of a reprogrammable processor after sale of the gun such as transferring data between guns, displaying parameters relating to a gun's operation, or uploading programming data or software upgrades to the gun. '814 patent, col. 5, ll. 8-15. In addition, the claim language itself does not limit the claims to reprogramming by a consumer or only after sale of a consumer device, but encompasses all reprogramming. Most importantly, for purposes of this appeal, the claims cover use of reprogrammable processors in paintball guns during development of the guns.

We next apply these claim constructions in our obviousness analysis.

## II.

Determining obviousness begins with the standard set out in 35 U.S.C. § 103(a):

A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Obviousness of a claim under § 103(a) is a legal conclusion which depends on at least four underlying factual determinations: (1) the scope and content of the prior art; (2) the differences between the claimed invention and the prior art; (3) the level of ordinary skill in the art; and (4) any relevant secondary considerations. See *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966). When claim elements are found in more than one prior art reference, the fact finder must determine "whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims." *In re Kahn*, 441 F.3d 977, 988 (Fed.Cir.2006). "What the prior art teaches, whether it teaches away from the claimed invention, and whether it motivates a combination of teachings from different references are questions of fact." *In re Fulton*, 391 F.3d 1195, 1199-1200 (Fed.Cir.2004). The factual determinations underpinning a jury's finding of non-obviousness are reviewed under the substantial evidence/reasonable juror standard. *Richardson-Vicks, Inc. v. The Upjohn*



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Co., 122 F.3d 1476, 1479 (Fed.Cir.1997). However, this court reviews the legal decision of obviousness without deference. *Id.*

The district court analyzed the evidence regarding obviousness of claims 21 and 39 in both its summary judgment order and its order granting JMOL. In the summary judgment order, the court found that the Angel V6 prior art product disclosed all elements of these claims except for the element common to both claims that the gun be "in communication with a remote terminal" and the element of claim 21 requiring a data communication link for replacing program instructions. *Summary Judgment Order*, slip op. at 22. In addition, the court found that "it was known in the art to use reprogrammable microprocessors such as those in the accused devices which inherently include a communications port," but that prior art paintball guns used one time programmable processors because they were lower in cost. *Id.* Thus, the only fact question left for trial was "whether in light of the prior art one of ordinary skill in the art would have had the motivation to combine the reprogrammable microprocessor with the prior art paintball gun." *JMOL Order*, slip op. at 4. Correspondingly, the only issue after trial in the JMOL determination was "whether a reasonable fact finder could only conclude that clear and convincing evidence established that there was a suggestion or motivation to one of ordinary skill in the art to make the combination." *Id.*, slip op. at 5. The court found that the "evidence was overwhelming that one of ordinary skill in the art would have known and been motivated to employ a reprogrammable microprocessor at least in developmental paintball guns." *Id.* The court explained its analysis of obviousness:

\*5 The prior art at trial which led to the Court's finding of obviousness concerned teachings to use reprogrammable microprocessors in developmental products. This prior art, coupled with the consistent testimony of witnesses engaged in product development that they knew to use reprogrammable microprocessors in developmental products, including paintball guns, rendered the invention obvious.

*NPF Ltd. v. Smart Parts, Inc.*, 04-C-221-S, slip op. at 3 (June 2, 2005) (explaining the JMOL ruling while denying Smart Parts' motion for a finding of an exceptional case). The court also found that no other evidence could negate the conclusion that it was obvious to combine a reprogrammable processor with a paintball gun in developing the guns. *Id.*, slip op. at 6-8.

NPF argues that the district court erred in granting JMOL because substantial evidence supported a jury finding of non-obviousness. First, NPF argues that Smart Parts did not prove a motivation to combine a reprogrammable processor with a paintball gun. Second, it points to its evidence of secondary considerations and argues that the jury could have relied on this evidence to find non-obviousness. Discussing each of these arguments in turn, we find that the district court properly granted JMOL.

#### A.

We first discuss whether a reasonable fact finder could only conclude that clear and convincing evidence established that there was a motivation to one of ordinary skill in the art to make the claimed combination. Before reaching this issue, we must first determine the understandings and knowledge reflected in the prior art. We agree with the district court that the prior art before the jury showed that reprogrammable processors were known for use in the development of products containing microprocessors. Specifically, a treatise entered into evidence for the jury's consideration stated:

Most engineering projects use [reprogrammable microprocessors] for their development phase. These erasable and reprogrammable memories will allow a part to be reused instead of thrown away. When the part goes into production, the EPROM parts can be replaced with one-time programmable (OTP) devices.... [T]he OTP parts are cheaper than the EPROM parts to manufacture thus reducing product costs.

(J.A. 45.) This prior art shows the knowledge of those who did product development using microprocessors. Such persons skilled in the art used reprogrammable processors during development because the instructions stored on the processors may undergo many changes before the instructions are finalized. If a one-time programmable processor is used, it must be discarded if it has a problem or must be changed. By using a reprogrammable processor, the same processor can accommodate many revisions of software until the developers determine the final software version for customer sale. When the developers finalize the software for the processors, they put the software on lower cost one-time programmable processors for consumer sale. This use of reprogrammable processors was therefore well-known at the time of the patents in suit. We agree with the district court that the issue is whether a person of ordinary skill in the development of paintball guns at the time of the invention would have been motivated to use a reprogrammable processor in this way during development.

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\*6 NPF provides several arguments as to why Smart Parts did not prove a motivation to combine. First, NPF argues that Smart Parts' expert did not provide any evidence on this issue. Smart Parts' expert stated: "It's my opinion that by the end of 1997 certainly microcontrollers could have been designed into paintball guns or were described in paintball gun prior art references. Also microprocessors that could have been designed into paintball guns could be reprogrammed either remotely or externally to update their program instructions." (J.A. 541.) We agree with NPF that such testimony is irrelevant to the motivation to combine analysis. What "could have been" merely employs hindsight to determine whether the claimed invention was technically feasible at the time of the invention. Such testimony does not address the central question in the motivation to combine inquiry--"whether a person of ordinary skill in the art ... would have been *led to make the combination* recited in the claims." *Kahn*, 44 F.3d at 988 (emphasis added). Merely knowing, years later, that someone could have successfully made the combination does not aid in determining whether at the time of the invention, one of skill in the art would have been motivated to do so. NPF is therefore correct that Smart Parts' expert did not provide the requisite evidence of motivation to combine.

However, the district court did not rely on Smart Parts' expert's testimony in concluding that a reasonable jury could only have found there was a motivation to combine. Rather, the court relied on the evidence that actual electronics designers used reprogrammable processors in paintball guns during product development before the priority date to conclude there was a motivation to make that combination. *JMOL Order*, slip op. at 6-7. Therefore, on appeal, NPF next argues that evidence that certain developers used reprogrammable processors during paintball gun development could not properly serve as the basis for a finding of motivation to combine because the use was not sufficiently public to constitute prior art. But NPF's argument addresses the wrong issue. Although these uses may not have constituted prior art, they nevertheless can be evidence of a motivation to combine. *See Kahn*, 441 F.3d at 987-88. Evidence that those of ordinary skill in the art in fact combined the prior art teachings as claimed is certainly evidence that they were motivated to do so. Such evidence shows the knowledge of the skilled artisan at the time of the invention, which can provide the basis for a motivation to combine. *See id.* at 989. Evidence that

multiple developers of microprocessors for paintball guns used reprogrammable processors shows that it was within the knowledge of one of ordinary skill in the art to use reprogrammable processors during development.

Even if relevant to the motivation to combine inquiry, NPF argues that the jury could have chosen not to believe that the developers who testified actually used reprogrammable processors during their development. However, developers at Smart Parts and at third party developer PneuVentures provided uncontradicted testimony of their use of reprogrammable processors prior to this patent's priority date. For example, Michael Scott, a third-party contractor who developed electronics for a Smart Parts' Shocker paintball gun, testified that he designed and fabricated a prototype electronics board which "included a reprogrammable microprocessor with downloaded program code." (J.A. 459.) A paintball gun designer for PneuVentures, a competitor who never introduced a commercial gun, testified that he "[a]bsolutely" used reprogrammable processors in development guns he made in the first half of 1997. Both of these witnesses, undisputed by NPF, clearly showed those developing electronics for paintball guns were actually motivated to use a reprogrammable processor during development.

\*7 Further, NPF does not point to substantial evidence supporting a jury's finding that there was no motivation for paintball gun developers to use reprogrammable processors during development. The inventor testified that it would "surprise" him to learn that other paintball gun manufacturers were also using reprogrammable processors during the development stage. Such evidence is not sufficient to support the jury's verdict. NPF also points to its expert's testimony that there was no motivation to combine reprogrammable processors with paintball guns. NPF's expert, Dr. Turcic, opined that the advancements in the '814 patent were the introduction of "external communication and reprogramming capability" to paintball guns. (J.A. 757.) He then provided uncontradicted testimony that nothing in the prior art provided motivation for someone to add these features to a paintball gun at the time of the patent. (*Id.*) However, nowhere does Dr. Turcic's testimony address the use of reprogrammable processors *during development* of a paintball gun. In addition, as previously discussed, the claim construction does not require any external communication to a processor for reprogramming. Therefore, Dr. Turcic's testimony is not relevant to the issue before us--whether there was a motivation

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to use reprogrammable processors during development of a paintball gun.

The claims undisputedly cover the use of reprogrammable processors for development of paintball guns. Developers of paintball guns were undisputedly actually motivated to use reprogrammable processors during development. Therefore, the district court correctly concluded that a reasonable fact finder could only conclude that a person of ordinary skill in the art would have been motivated to combine a reprogrammable microprocessor with a paintball gun during development.

#### B.

NPF argues that the jury's verdict declining to find claims 21 and 39 obvious could also have been based on substantial evidence NPF presented of secondary considerations of non-obviousness. For example, NPF shows that it presented ample testimony showing that the paintball gun industry was specifically avoiding using reprogrammable microprocessors in paintball guns sold to consumers, therefore teaching away from this combination. However, the evidence shows that the industry was concerned about allowing *consumers* to reprogram their paintball guns, due to safety concerns. The evidence presented by NPF therefore may have been relevant to whether it was obvious to use the claimed invention in sale to consumers because it suggests that the industry was teaching away from such use. However, the evidence does not address whether the industry taught away from using reprogrammable processors during development of paintball guns and therefore is not relevant to the obviousness analysis here.

NPF's evidence of commercial success also could not have overcome the conclusion that the claims at issue are obvious. NPF cannot counter the showing of obviousness by its evidence of commercial success "unless it can show that the commercial success of the product results from the claimed invention." *J.T. Eaton & Co. v. Atl. Paste & Glue Co.*, 106 F.3d 1563, 1571 (Fed.Cir.1997). "Furthermore, the asserted commercial success of the product must be due to the merits of the claimed invention beyond what was readily available in the prior art." *Id.* NPF points to no evidence indicating that the commercial success of the Smart Parts paintball guns was due to the development aspect of the claims at issue. Therefore, NPF's evidence of commercial success cannot rebut the evidence of obviousness presented by Smart Parts.

#### CONCLUSION

\*8 Both the evidence presented at trial and the arguments made by NPF on appeal indicate that the jury may have been swayed to find claims 21 and 39 of the '814 patent non-obvious based on evidence that the use of reprogrammability features by *consumers* of paintball guns was not obvious. However, the claims at issue clearly cover the use of reprogrammable processors in *developmental* paintball guns. As a reasonable jury could only have concluded that this use was obvious, the district court properly granted JMOL that claims 21 and 39 of the '814 patent were obvious as a matter of law.

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